

Living Environment Midterm

Midterm Review

Give a brief definition and an example for each when applicable.

A. Definitions and the Concept of Life

A. Life Functions

1. Nutrition A combination of ingestion and digestion.

Eating (heterotrophs) or Photosynthesis (Autotrophs).

2. Transport _____.

3. Respiration _____.

4. Excretion _____.

5. Synthesis _____.

6. Regulation _____.

7. Growth _____.

8. Reproduction _____.

9. Metabolism _____.

10. Homeostasis _____.

Structure of Living Things

A. Cell Theory

1. Past and Present Concepts (Three parts of it)

1) _____.

2) _____.

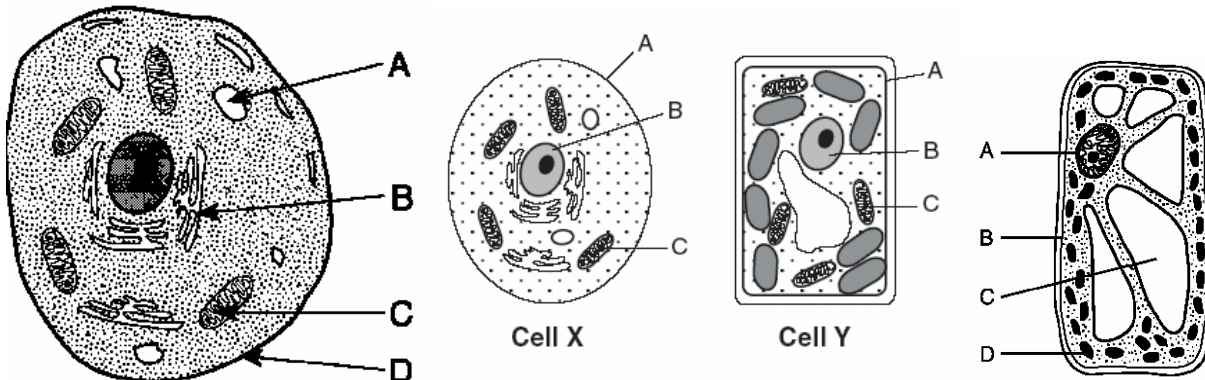
3) _____.

2. Methods of Cell Study

Centrifuge: used to _____.

Micro dissection: Used to _____.

3. Cells& Cell Organelles



Label A, B, C, and D for each cell diagram. Identify as an animal or plant cell.

Organelles carry out specific processes involving chemical reactions. In the chart below, identify *two* organelles and, for each, identify a process involving chemical reactions that occurs there. Describe *one* specific way each process identified is important to the functioning of the organism. [4]

Organelle	Process Involving Chemical Reactions that Occur in the Organelle	How the Process is Important to the Functioning of the Organism
(1) _____ _____	_____ _____ _____	_____ _____ _____
(2) _____ _____	_____ _____ _____	_____ _____ _____

Level of Organization:

Atom → Molecule →

4. Exceptions to the Cell Theory

- 1) _____.
- 2) _____.
- 3) _____.

Biochemistry:

A. Elements and Inorganic Compounds

1. Elements _____.
2. Inorganic Compounds _____.
3. Organic Compounds _____.

B. Carbohydrates

1. Composition of Carbohydrates C___H___O___.
2. Examples of Carbohydrates _____.
3. Function of Carbohydrates _____.

C. Lipids C___H___O___

1. Composition of Lipids _____.
2. Examples of Lipids _____.
3. Function of Lipids _____.

D. Proteins C ___ H ___ O ___ ? ___

1. Composition of Proteins _____.

2. Examples of Proteins _____.

3. Function of Proteins _____.

E. Nucleic Acids

1. Composition of Nucleic Acids _____.

2. Examples of Nucleic Acids _____.

3. Function of Nucleic Acids:

3a) _____.

3b) _____.

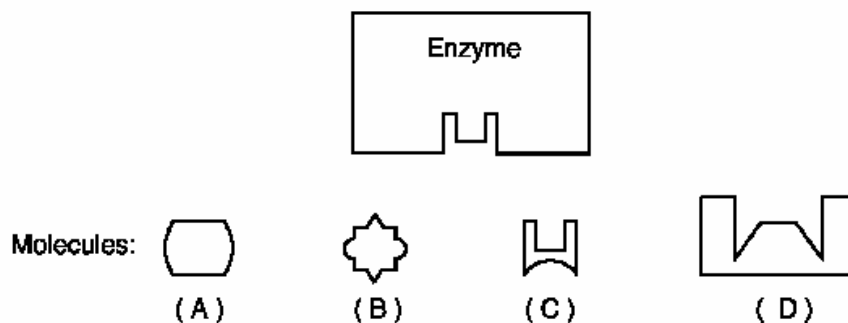
F. Chemical Enzyme Control

1. Protein Nature and Active Site _____.

2. Enzyme Specificity (ase & ose) _____.

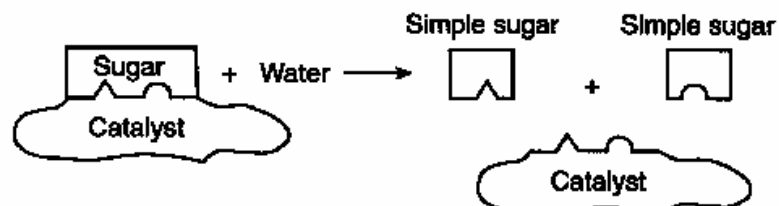
3. Enzyme-Substrate Complex _____.

An enzyme and four different molecules are shown in the diagram below.



Which molecule will work with the above enzyme?

The diagram below illustrates a biochemical process that occurs in organisms.



Describe dehydration synthesis and hydrolysis using the materials shown in the above diagram.

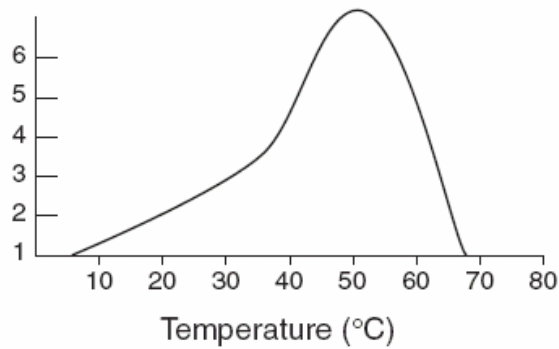
4. Enzymatic Action & Reaction Rate _____.

5. Denaturation _____.

6. What will happen to the organism whose enzyme metabolism is shown below as a function of temperature?

_____.

What is the independent variable in this experiment? _____.



Transport

A. Process of Absorption _____.

1. Structure of Cell Membrane _____.

2. Function of Cell Membrane _____.

3. Active Transport _____.

3a) Passive Transport _____.

Diffusion _____

Osmosis _____

Cell Respiration

Types of Cell Respiration

1. Anaerobic Respiration _____.

Chemical Equation =

Takes place in which organelle? _____

Produces how many ATP molecules from 1 glucose? _____

2. Aerobic Respiration _____.

Chemical Equation =

Takes place in which organelle? _____

Produces how many ATP molecules from 1 glucose? _____

The opposite reaction =

A. Nutrition in Humans

A. Functional Organization

1. Oral Cavity _____.
2. Esophagus _____.
3. Stomach _____.
4. Small Intestine _____.
5. Large Intestine _____.
6. Gall Bladder _____.
7. Liver _____.

B. Malfunctions of Digestion

1. Ulcers _____.
2. Constipation _____.
3. Diarrhea _____.
4. Appendicitis _____.
5. Gallstones _____.

C. Dietary Needs

1. Roughage _____.
2. Vitamins _____.
3. Carbohydrates _____.
4. Proteins _____.
5. Lipids: Which are good and which are bad? _____.

B. Human Transport

A. Functional Organization

1. Function of Blood _____.
2. Blood Types (4 types) _____.

Functions of...

3. Red Blood Cells _____.
4. Platelets _____.

Human Immunity:

1. White Blood Cells _____.
- 1a. Lymphocytes _____.

1b. Phagocytes _____.

Antigens: Foreign substances that cause the body to produce _____. Ex: _____.

Antibodies: proteins produced by the body to destroy _____ that enter & disrupt homeostasis.

2. Types of Immunity: Active & Passive.

Active: _____.

Passive: _____.

3. Immunity: Vaccines

What are they? _____.

How do they help protect against disease?)

_____.

9. Allergies (cause & what chemical does the body produce in response?)

_____.

10. Organ Transplants (what do they have to make sure matches?)

_____.

D. Malfunctions of the Transport System

1. High Blood Pressure _____.

2. Coronary Thrombosis _____.

3. Angina Pectoris _____.

4. Blood Conditions:

Anemia: _____.

Leukemia: _____.

Human Respiration:

Describe the gas exchange that takes place in the alveoli of the lungs including the gases involved.

_____.

C. Malfunctions of Respiratory System

1. Bronchitis _____.

2. Asthma _____.

3. Emphysema _____.

4. Cigarette Smoking _____.

Endocrine System: Give the function of each and name the hormone(s) produced.

1. Definition and Characteristics

Hormones _____.

Endocrine function compared to nervous function.

Which is faster? _____.

Which lasts longer? _____.

Which uses blood to transport? _____.

1. Pituitary Gland _____.

2. Thyroid Gland _____.

3. Islets of Langerhans (pancreas) _____.

Insulin: _____.

Glucagon: _____.

4. Gonads _____.

The goal of the endocrine system is to regulate the body and achieve _____ or _____ using hormones.

5. Feedback Mechanism (negative feedback) think of how a thermostat works & give specific examples of negative feedback in a human.

_____.

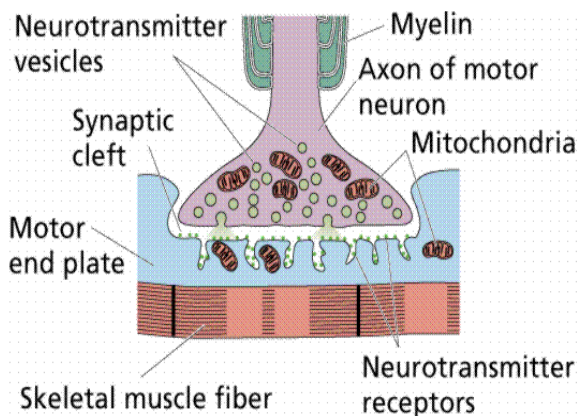
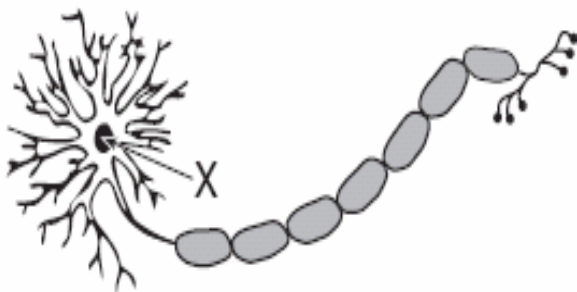
D. Malfunctions of the Endocrine System (causes prevention and treatment)

1. Goiter _____.

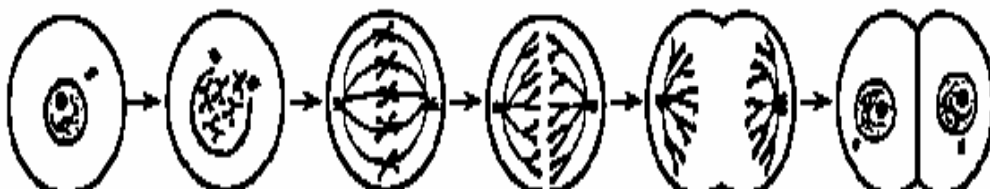
2. Diabetes _____.

Nervous System:

The goal of the nervous system is to regulate the body and achieve _____ or _____ using neurotransmitters.



A. Asexual Reproduction:



List the phases of mitosis in order using the space below and label them in the above diagram.

A. Mitotic Cell Division

1. Mitosis: Start with 1 cell and finishes with _____ cells.

Start with 46 chromosomes in each human cell and finishes with _____ chromosomes.

Used by the body for _____ and _____.

2. Uncontrolled Cell Division is called _____.

Malignant is _____.

Benign is _____.

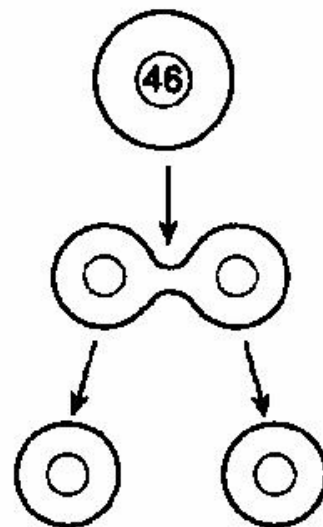
Identify 3 mutagenic agents (things that cause mutations) that are linked to the condition above.

1) _____ 2) _____ 3) _____

B. Importance of Asexual Reproduction

What are the advantages of Asexual Reproduction?

1. Binary Fission. Cell divides into _____ equal parts.



Mitosis
Produces 2 daughter cells
Same # of chromosomes as parent cell
Growth and repair of body tissues

Laboratory Skills:

A. Scientific Method (Paul, Really, Hates, Erik, Interrupting, Class)

A. Steps in the Scientific Method

1) P _____: _____

2) R _____: _____

3) Hypothesis: _____

4) E _____: _____

a. Variable (How can it be identified in an experiment? How many should there be?)

Dependent Variable: _____

Independent Variable: _____

b. Control Group (How can it be identified in an experiment?)

5) I _____ Data: _____

6) C _____: _____

experimental group = _____.

constants = _____.

Experiment questions Things to know!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!

human ethical issues (cloning)

side effects Not everyone reacts the _____.

Large number of participants makes the data more accurate

Large number of trials prevents mistakes from skewing data.

Good experiments are repeatable!

Test before and after experiment (ex: blood pressure & blood pressure medications)

Look for noticeable changes and give units that you'll be testing for.

(height in cm, color, mass in grams, width in mm, number of seedlings)

B. Scientific Apparatus

A. Identification & Function

1. Thermometer Identifies _____. Both Celsius & Fahrenheit.

Body temp in both? _____ C and _____ F.

2. Balance measure mass.

3. Graduated Cylinder (Volume) "Meniscus"

4. Centrifuge (separates based on density)

5. Metric Ruler King, Henry, Dances, merrily, down, central, main

Km, Hm, Dm, m, dm, cm, mm, ___, ___, μm

1000 μm = 1mm

1. Metric Conversions

0.1 mm = ___?_ μm

1mm = ___?_ Km

C. Microscope

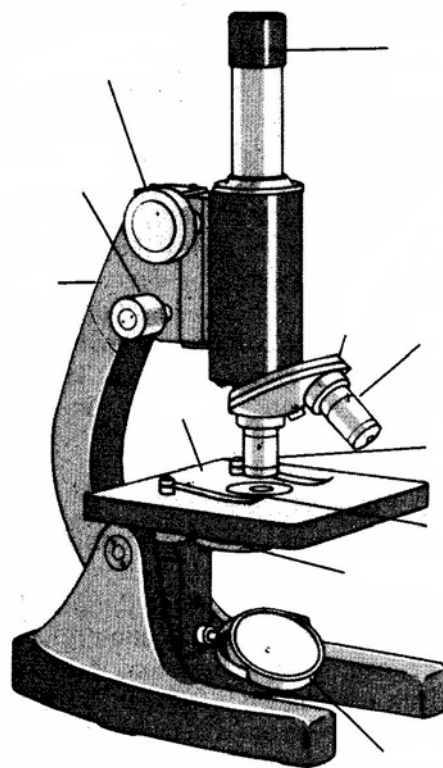
1. Parts of the Microscope

2. Wet Mount: Describe the correct procedure for setting one up.

Staining techniques: Why used and with which stains?

3. Microscopic Measurement (Field of view)

4. Determining Total magnification _____ times _____.



Testing with Indicators

A. Gas & Moisture

1. CO₂ B _____ blue tests for CO₂ it turns _____ in the presence of CO₂

B. Nutrient Tests

1. Sugars We used _____ solution (the other blue stuff)
2. Starch We used _____ to test for starch, it turned from orange/brown to _____ as a positive test.

D. Safety (use of safety goggles)

A. Heating

1. Apparel
2. Handling

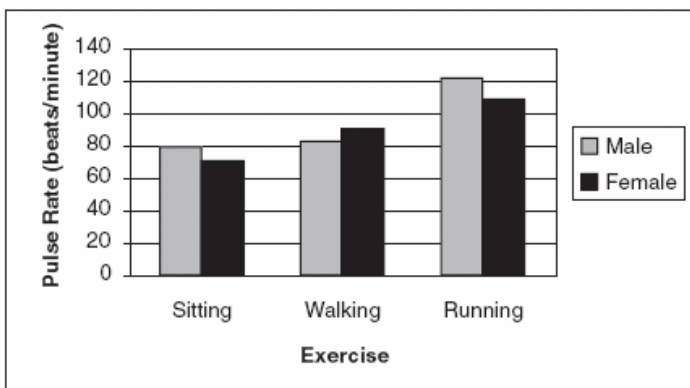
B. Chemical and Physical Hazards

1. report Spills
2. no Tasting & Smelling (wafting)
3. Sharp Instruments
4. report Breakage

Labs:

Making Connections

In an investigation, 28 students in a class determined their pulse rates after performing each of three different activities. Each activity was performed three times during equal time intervals. The average results are shown in the graph below.



Diffusion Through a Membrane

A student prepared a wet-mount slide of red onion skin and observed it under high power of a compound light microscope (view A). After adding a substance to the slide and waiting one minute, the student observed that there were changes in the cells (view B).

